

**Iowa Public Television
FY 2013 Budget Request
Purchase of Inductive Output Tubes (IOTs)**

Funds Requested:

\$320,000

Six of IPTV's transmitter sites use primary transmitters that are based on high-powered transmitting tubes called Inductive Output Tubes or IOTs. At two of the sites we use transmitters that require two of these tubes and at the other four sites we use single tubes, for a total of 8 tubes in the system. With the digital television conversion, all of the tubes were replaced with new tubes. Tubes have a life expectancy of approximately 40,000 hours in continuous use. The devices have been in use for three to four years depending upon the installation at each site. The tubes will start failing once they reach 40,000 hours of use and must be replaced.

IOT devices are typically in the \$35,000.00 to \$40,000.00 range. Funding of \$320,000 allows Iowa Public Television to purchase 8 IOTs as replacements over the next three years. There is not an exact science for predicting the life expectancy of the IOT devices; estimates are based on industry recommendations and experience. In a two-tube transmitter, since both tubes are the same age and have been operated under the same conditions, it's best to replace them in pairs as opposed to making the newer tube work harder to make up for the older tube which would shorten the life expectancy of the new tube. However, if one of the tubes needs to be replaced because it is failing prematurely due to some defect (vacuum loss or material impurity) and the other tube is still operating well within its limits, then replacing one and leaving the other is acceptable.

To manage the appropriation cuts received over the last three years, Iowa Public Television decreased its hours of broadcast from 24 hours a day to 19 hours a day. While the suspension of overnight operations has reduced the electrical cost associated with transmitter operation, it ultimately will only defer costs. The Inductive Output Tube (IOT) devices used in the UHF transmitters have a life expectancy of approximately 40,000 hours in continuous use. Like light bulbs, their life expectancy drops significantly when turned on and off due to the stress associated with on and off operation. We can expect a reduction in life expectancy on the order of 8,000 to 16,000 hours depending on the hours of operation already on the tube when overnight operations ceased. IPTV will have to replace the tubes sooner than if we were broadcasting 24 hours a day.